accept every provision of the Council. All honest men welcome just such a move; those who object and loudly clamor of their rights—well, it's easy to classify *them!*

SUDDEN CHANGE.

But very recently a sudden change seems to have begun to come over the editorial mentality of some of the pharmaceutical journals. A number of druggists' associations have expressed their hearty approval of the Council on Pharmacy and Chemistry, and have congratulated the Association upon the formation of this Council. The wise druggist sees at once just what the import of the carrying out of this scheme will mean to him. He sees relief from somewhat of the burden he is now forced to carry, in the shape of worthless nostrums, a small demand for which may be worked up by the wily manufacturer, inducing a few physicians to forget their duty and prescribe the secret stuff. Now, the druggists are the subscribers to and supporters of the drug journals. If the druggists approve of the Council, assuredly the drug journals cannot for long continue to abuse it; and some of them are already beginning to "hedge." When one appreciates it fully, the situation is really delightfully funny; the whole machinery of dishonesty is put out of order and rendered impotent by just a little honest effort and straight talk!

TENDON TRANSPLANTATION.

By F. LANGE, Munich.

Translated by James T. Watkins, M. D., San Francisco.

(*Concluded from page* 152, *May* JOURNAL.)

Finally, the possibility of thread-infection deserves mention. The danger that the silk threads be subsequently extruded in this way I do not consider nearly so great as Vulpius does. Vulpius, who reports over 400 tendon plastic operations—among which there apparently occur only a few operations with silk tendons—has experienced, in 25 per cent of his cases, after weeks or months, extrusion of individual threads. I myself have in 216 tendon plastic operations—among which 126 are supplied with silk tendons—to record only something over 2 per cent of thread infections. The difference in these figures, 2 per cent (Lange) against 25 per cent (Vulpius) is so great that a coincidence is excluded; the cause of this difference must so much the more be sought in the method. Vulpius operates with hood and lisle-thread gloves; I use rubber gloves and mouth and brow bandages. In these two much discussed points, we therefore agree very well. That, above all, nothing in Vulpius' asepsis during the operation is to be regarded as the cause of the secondary extrusion of the threads, I hold beyond question with such a surgeon as Vulpius; also the great number of his perfect primary unions speaks against anything being wrong with his asepsis. Therefore it is very probable that the cause lies in the after treatment. Vulpius closes the wounds completely; I introduce a little piece of gauze wet in sublimate (1:1000) into one corner of the wound which is closed everywhere else, and drain the latter in this way for 48 hours.

Earlier I used to remove the strip of gauze through a fenestrum in the plaster dressing. That was inconvenient and took time. At the suggestion of my assistant, Dr. Oberrait, of late I tie a long silk thread to the gauze drain, carry the other end of the silk thread out at the upper or lower border of the plaster dressing, and after forty-eight hours remove the gauze by a vigorous pull on the silk thread, without in any way changing the dressing. (Temporary drainage.)

Vulpius advises against such a procedure. He says, "The better closed the sutures over the tendon, the more certain are we to avoid a secondary infection of the sunken suture material." Theoretically that sounds quite plausible, but the practice in this case speaks to my advantage. I have right frequently observed that from the angle of the wound from which the gauze drain projected, for days or even weeks a cloudy serous or cloudy hemorrhagic, or even an oily secretion was discharged. Where the fluid came from was not always to be certainly determined. Frequently a necrosis of torn-off fatty tissue or a bit of fascia may have caused it. That it resulted from infection is altogether improbable, since the wound itself and the skin sutures appeared perfect, and since I have never observed with it a rise of temperature. The secretion appears to be of an entirely harmless nature, and I think that the ordinary wounds, such for example as are caused by the removal of a tumor or similar operations which have been completely sutured, such a secretion is as a rule resorbed without presenting any symptoms.

The conditions are different, however, in wounds in which foreign bodies are to heal in. If such wounds are completely closed, and if any secretion develops in them (it does not appear to me unlikely), I think it is much more judicious to obtain a free discharge of the secretion. The very small number of my stitch abscesses as compared with that of Vulpius speaks eloquently for the correctness of my assumption. This question, whose explanation I hold to be well worth while, would be easily determined, should Vulpius agree to test my method, and should he in that way obtain any appreciable decrease of stitch abscesses. You see that from my method I have thus far according to my experience no reason to fear stitch abscesses. Nevertheless, I would even to-day have less faith in my silk tendon if the silk tendons did not become true tendon tissue. Two years ago, at the meeting of the Society for Original Research (Naturforscherversammlung) in Hamburg, I said that my clinical experiences seemed to indicate that the silk tendons become surrounded by living tissue because the former under the influence of function became thicker from month to month, and I was able to present in Hamburg a microscopical specimen which showed that the new tissue was composed of true tendon tissue. I am happy to say that I can place before you two other preparations of silk-tendons. The one comes from a 5-year-old boy; the other from an 18-year-old girl. Both silk tendons have functionated for more than two years. In the course of a necessary secondary operation it was possible for me to obtain the preparation. You see admirably well in both not only how the silk is surrounded by a sheath of tendon, but also you see especially in the cross-section how organization pushes into the interior of the tendon, and how true tendon tissue forms the nucleus of one of the silk tendons. The specimens further present extraordinarily interesting disclosures concerning the nature of the origin of the new tissue. There were two possibilities for the development of tendon tissue; either the new structure could arise from the tendon stumps of the transplanted muscle, or it could develop of its own accord. First, a young connective tissue appeared about the silk tendon, from which there gradually developed true tendon tissue. My specimens speak altogether for the last assumption. For you see in the central layers in the neighborhood of the silk, very young connective tissue, with numerous cells, vessels, and giant cells, while towards the periphery, in the evidently older layers, the tissue is progressively poorer in vessels and cells, and more and more assumes the character of true tendon tissue.

The specimens are certainly very interesting, but still more interesting for us is the question, what use have the patients for the silk tendons?

The functional worth of the silk tendons can best be determined from their services in quadriceps paralysis. In this paralysis already in rare instances —and notably a case reported by Krause—a good result has been obtained. However, as a rule, the results are so bad that by certain authors, Gocht for example, the substitution of this strong and important muscle was held to be hopeless. By transposing the biceps and semiten. to the front, by elongating them with silk tendons, and by suturing the tendons to the periosteum of the tibia, I was able to devise a method which in all cases where these flexor muscles are retained can be employed and promises a satisfactory result. Vulpius, who expresses so many doubts about the periosteal transplantation and the silk tendons, has with this paralysis discarded the older method in favor of the periosteal plastic operation. He elongates the substitute muscles, which have been transposed forward, by silk tendons, and sutures the latter to the periosteum. The slight modification which Vulpius employs—Vulpius sutures to the periosteum of the patella, .1 to the periosteum of the tibia—is insignificant, if the lig. patell. inf. is in good condition. If the latter has been injured by the paralysis, there is danger that the ligament may elongate under the influence of subsequent muscular contraction; this modification of Vulpius' would render doubtful the result of the entire operation. The function of the new muscle is not to pull the patella upward, but to extend the leg, and therefore the natural and only certain point of attachment for the new tendon is the tuberosity of the tibia. Vulpius has also theoretical objections to this recommendation, because the silk tendon is in this way longer. However, I think this question is already answered by the practical results.

I have employed silk tendons twenty-five times in substituting for the quadriceps, and have thus far never experienced any kind of a disturbance or extrusion. In seven patients there remained to be employed for this purpose a single flexor muscle. Such cases are doubtful; nevertheless, one can make the attempt. In four of these cases, I have been able to free the patients from their apparatus. In the nineteen other joints, there were two flexor muscles which could be employed. Of these patients at this moment three are undergoing treatment and employ apparatus; still, they will all presumably be freed from their apparatus. The method offers, according to my experience, the most certain and best prospect imaginable which a tendon plastic operation can offer—assuming beforehand that two strong muscles are present for the substitution. If the substitute muscles have similarly suffered from the paralysis, it is evident that through it the subsequent functional result must be impaired. If pathologically changed muscles must be employed in substitution, a normal function need never be expected. However, the children operated upon have almost always received benefit from the operation, not only through the ability to stretch the knee, but especially through the appropriate arrangement of the musculature which is obtained by the operation.

The greatest claim on the leg musculature in walking is made at the moment, if the body rests on one leg, when the other leg is carried from behind forward. In this phase of the gait the standing limb is held extended in the hip and in the knee joint. The extension of the knee joint is normally obtained by the quadriceps, while the biceps, semitendin., and semimenbran. cause extension in the hip joint. Since however these latter muscles through their simultaneous contraction cause flexion of the knee joint, a large portion of the strength of the quadriceps is employed to neutralize the knee-flexing influence of the semitendin., semimembran., and biceps; for the function of the leg in standing or walking, such an arrangement of the muscles is unsuited, and it is distinctly more advantageous—once one is compelled to be economical with the muscle force present—to procure a muscle which at the same time extends the leg at the hip and at the knee joint. This is brought about by the method which I recommend of transplanting the biceps and semitendin. to the front, and in this way the fact is explained that even in cases in which transplanted muscles have suffered injury and present only a few brownish red fibrils while the greater part of the muscle mass is degenerated, still the object of the operation, to enable patients to walk without apparatus, is as a rule obtained. Of course these patients were never able to hold the leg horizontally when it had been extended at the knee joint; still as a rule they were able to extend the leg while lying on the side. On the other hand when the transplanted muscles were completely sound, an ability to extend at the knee joint was obtained, which in strength was not far behind that of a healthy leg.

The testing of the power to make extension at the knee joint requires the greatest precautions. The patients employ unconsciously all sorts of devices in order to extend the leg at the knee. Many twist the entire limb as far as possible outward, and they are able in this position by means of the tension of the medial ligaments of the knee joint to lift almost horizontally the leg at the knee, even if no muscle at all be present which can cause extension at the knee. Other patients seat themselves so that the paralyzed leg is supported at the bend of the knee either by the chair or the leg, and in this way they render easier the task of extending the leg at the knee. To this category of patients would appear to belong the child which Vulpius operated upon and pictured in his monograph. Such a photograph should not be convincing of the serviceability of the transplanted muscle. Just as little does the simple information suffice in the history of the case that the operated patient has learned to extend the leg. It must always be positively determined whether the patient is able to extend the leg only in the side position, or whether he can hold the freely extended leg horizontally. Only in the last case, when the new muscle is able to overcome the weight of the leg, can one speak of a practically normal ability to extend it. The result of the quadriceps plastic operation as I recommend it depends in the first place, as already said, upon the condition of the muscle to be employed; in the second place, upon the tension which the operator gives to the transplanted muscle.

The muscles which are transplanted to replace the quadriceps must, according to my experience, be sutured under the strongest tension which is permissible; against this recommendation, also, Vulpius has theoretical scruples to present, and fears an injury to the transplanted musculature from the extreme tension. My experiences speak emphatically against the correctness of Vulpius' assumption; for my results have become better from year to year, the more I learned to suture the transplanted muscle under stronger tension. The strongest tension which I have ever given to a transplanted muscle, was employed for a patient whose dressings were removed fifteen weeks after operation. This fact shows that the transplanted muscles are not injured by the extreme tension which I have employed, and it ought to demonstrate better than all theoretical arguments the serviceability of my method. A necessity for modifications and changes in this method I can only admit when it has been demonstrated that through them quicker and better results can be obtained.

Meine Herren, I trust that you have received from my words the impression that I am absolutely convinced of the advantages of the periosteal plastic operation and of silk tendons. Nevertheless, I do not utterly condemn the old method. For light cases, the old method is equally applicable with the new. If the paralyzed tendon is so strong that a reliable suturing of it with the power-giving muscle is possible, and the dissection of the paralyzed muscle corresponds to the functional necessity of the particular case, I also employ the old method. Indeed, there are cases where the old method offers distinct advantages over the periosteal plastic operation. If, for example, in the hand, the extens. dig. is par-

alyzed, and the extens. carpi. rad. must be used to replace it, in such a light task it is as a rule more correct to suture tendon to tendon than to permit four silk tendons to go out from the power-giving muscle to be attached to the basal phalanges of the fingers. If, without endangering the result of the operation, one can spare the patient four wounds, and in that way render the operative procedure easier and less dangerous, of course one must do it. The conditions in severe paralyses are different. Here, according to my view, we must above all things seek to obtain functional independence for the few muscles which are left, and if you agree with me in this you will further agree with me if I employ for these cases as a rule that method which assures the greatest certainty of the result, and the greatest freedom in constructing our operation plans; that is, the method of the periosteal plastic operation and of silk tendons.*

REPORT OF THREE CASES OF INFRA-DIAPHRAGMATIC AND ONE OF SUPRA-DIAPHRAGMATIC AORTIC ANEURISM.

By C. M. COOPER, M. B., San Francisco.

CASE 1. The first patient, whom I saw in extremis mortis, was an Italian 30 years of age, a gardener by occupation who had drunk wine freely and had had acute rheumatic fever eight years previously. He bore no evidence of past venefeal trouble; he now suffered from a tubercular right lung apex, but for the past year he had been subject to severe remittent pain which had begun suddenly. This was felt in the flanks and radiated to the mid point of the spine. It lasted for a few days and then disappeared to again recur. For six months he had had continuous pain in the pit of his stomach, and during the last month constant pain had been present in his back in the lower dorsal and upper lumbar vertebral region.

The doctor had found: 1st, rigidity of the dorso-lumbar spine without deformity; 2nd, moderate tenderness on percussion over this area; 3rd, pain radiating into both flanks on movement; 4th, somewhat rigid abdominal muscles with an absence of anything abnormal on abdominal examination.

In view of the association of these findings with a tubercular right lung apex, a diagnosis of tuberculosis of the spine had been made and a plaster jacket put on. This had occasioned increased pain and had had to be removed and I saw him shortly after this had been done.

He lay dying, with pinched face and a very quick, low pressure pulse. He was perfectly conscious, pale and complained of vague abdominal pain. The abdomen was extremely sensitive, but not distended; the anterior muscles were rigid. A very large fluctuating non-pulsating mass could be made out in the right lumbar and right iliac regions apparently along the line of the ilio-psoas muscle. Further examination seemed unjustifiable.

The autopsy held next day revealed a tuberculosis of the right lung apex and an aneurism growing from the right posterior part of the abdominal aorta opposite the upper fibres of origin of the psoas muscle into which structure the rupture had taken place. The aneurism had eroded the bodies of the 1st and 2nd lumbar vertebræ, having grown in a backward direction.

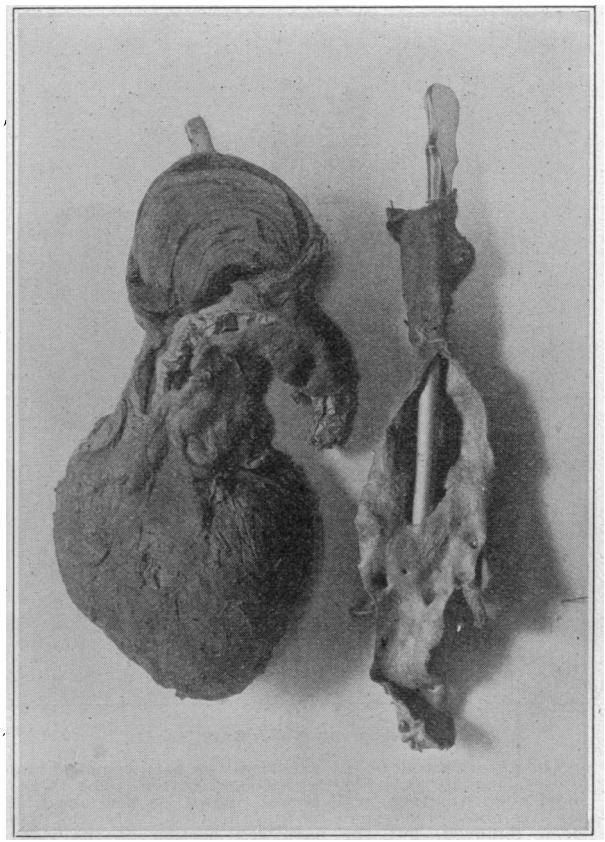
Case 2. The second patient, a strong muscular middle-aged laboring man, was referred to me for a fluoroscopic examination by one who, clinically, could find no cause for the presence of pain in the lower thoracic region and a harassing cough. The fluoroscope revealed a rounded pulsatile mass jutting out from the lower thoracic aorta and resting on the left diaphragm, without doubt a supra-diaphragmatic aortic aneurism. The man disappeared so that unfortunately I was not able in the light of this added knowledge to correlate the clinical and fluoroscopic findings. I briefly mention the case as it emphasizes that aneurism in the region of the lowest dorsal vertebræ may be supra as well as infra-diaphragmatic.

Case 3. Patient No. 3 was under the care of Dr. J. Wilson Shiels and myself. He was a colored individual, past middle life, who had labored hard and had had syphilis. It was plain that he had a large clotted saccular aneurism of the transverse portion of the thoracic aortic arch—an adherent pericardium and an enlarged thyroid gland with some indications of Grave's disease, but in addition there were some symptoms which could not be accounted for by the presence of these lesions. Severe pain in the pit of the stomach which radiated indefinitely into the loins was constantly present. At times intense exacerbation occurred and then the patient would lie motionless, curled up in bed, all movement aggravating the condition. There was a very marked general wasting such as not infrequently occurs in association with such intense pain. The skin of the abdomen and all the tissues of the legs were apparently very hyperesthetic. There was no muscular or sensory paralysis.

Local examination revealed: Some rigidity of the lower dorsal and upper lumbar vertebræ unaccompanied by deformity. A moderate amount of tenderness on deep percussion over this area. A thin abdomen, palpation of which was negative. The question arose, What was the cause of this intense pain and spinal rigidity?

The absence of symptoms relative to any abdominal viscus, and a point on which we were inclined to lay much stress, viz.: the absence of vomiting even during the exacerbations, seemed to us to rule out a visceral cause. The absence of deformity, the nonsuccess of rest in giving relief, together with the intensity of the pain, excluded in our opinion, tuberculosis of the spine. The absence of all paralytic symptoms, the absence of marked local tenderness, negatived tumor of the vertebræ. The absence of all paralytic symptoms, the presence of normal abdominal reflexes, the presence of moderate percussion tenderness, were against dural tumor.

The clinical picture did not imitate chronic osteo-arthritis of the spine and we were left with an aneurism of the abdominal aorta high up under the diaphragm as the probable lesion, even though the femoral pulses were full and not delayed, the history of syphilis and the presence of a clotted thoracic aneurism favoring this diagnosis. Thirty-two hours before death, a big, fluctuating, pulsatile mass appeared in the left loin; the left kidney and spleen were pushed downward and forward. The aneurism had evidently ruptured. The postmortem specimens were extremely interesting (See Figure No. 1). There was a large, clotted, saccular aneurism of the transverse portion of the aortic arch growing from its upper wall and a somewhat similar but much smaller localized saccular aneurism growing from the posterior left aspect of the abdominal aorta high up under the diaphragm, this having eroded the body of the first lumbar vertebra. I may add that in this patient potassium iodid was not tolerated—the smallest doses aggravating the symptoms and causing marked increase of the pulse rate; probably because of the condition of the thyroid gland.



Photograph No. 1, Case No. 3.

The thoracic aortic aneurism is shown growing from the upper aspect of the arch, and though it has attained a large size it does not interfere with the lumen of the aorta in which a mass of lead foil lies. The lamination of the clot is well shown. To the right is the abdominal aorta which has been cut open. A sound has been introduced into the descending thoracic aorta and made to protrude through a triangular opening which formed the mouth of the saccular abdominal aneurism. The big abdominal vessels are seen to arise below the aneurismal site.

*[References to illustrations occurring in the text were not omitted in the translation, in order to further preserve the accuracy of the original document. It was found impracticable to reproduce the original figures].